

Remarks

Claims 1-24 are pending in the application, and each was rejected. By this paper, claims 1, 3-7, 9, 11, 12, 14-16 and 18-24 are amended, and claims 2 and 13 are canceled. Based on the following, consideration of the amended claims, and reconsideration of the remaining claims, are requested.

Claim Rejections—35 U.S.C. § 102

The Examiner rejected claims 1-2, 4, 12-13 and 15 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2001/0025621 (Shiraishi et al.). The Examiner states that Shiraishi et al. discloses the control of an oxygen displacement valve so that at least a portion of engine exhaust gas is directed into an engine air intake "when an engine speed is below a first predetermined level (Fig. 19)." Applicant notes that Figure 19 in Shiraishi et al. shows a graph illustrating an EGR valve that is open during an engine start and an increase in engine speed.

By this paper, claim 1 is amended to more particularly point out and distinctly claim the subject matter of the invention. Amended claim 1 of the present application recites a method of controlling exhaust emission oxides, including the steps of "commanding an engine shutdown; determining when an engine speed is below a first predetermined level after the engine shutdown is commanded; and controlling an oxygen displacement valve (ODV) such that at least a portion of exhaust gas generated by the ICE is directed into an intake air flow of the ICE when it is determined that the engine speed is below the first predetermined level." No such elements are expressly or inherently described in Shiraishi et al.

This same analysis applies with equal force to amended claim 12, which recites a system for controlling exhaust emission oxides, including "a controller configured to command an engine shutdown, determine when an engine speed is below a first predetermined level, and control an oxygen displacement valve (ODV) such that at least a portion of exhaust

gas generated by the ICE is directed into an intake air flow of the ICE after an engine shutdown is commanded and the engine speed is below the first predetermined level." No such elements are expressly or inherently described in Shiraishi et al. The MPEP states that "'a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.'" MPEP § 2131, 8th ed., Rev. 3 (citation omitted). The MPEP further states that "'[t]he identical invention must be shown in as complete detail as is contained in the... claim.'" *Id.* (citation omitted). Therefore, with regard to Shiraishi et al. and amended claims 1 and 12, the MPEP definition of anticipation is not met.

By this paper, claims 2 and 13 are canceled, thereby rendering their rejections moot. Amended claim 1 is the base claim for amended claim 4, and amended claim 12 is the base claim for amended claim 15. Each of these dependent claims contains all of the limitations of its respective base claim, as well as additional limitations which further distinguish it from the cited reference. Therefore, with regard to Shiraishi et al. and claims 4 and 15, the MPEP definition of anticipation is not met.

The Examiner rejected claims 1, 3, 12 and 14 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,149,500 (Aoyama). The Examiner states that Aoyama discloses the control of an oxygen displacement valve such that at least a portion of engine exhaust gas is directed to an engine air intake "when an engine speed is below a first predetermined level (Col. 6, line 67-Col. 7, line 31)." The Examiner also cites column 7, lines 6-8 in support of the rejection. Applicant notes that the portion of Aoyama cited by the Examiner states that as the engine speed increases a vacuum will develop in a control vacuum chamber 16 and "the EGR valve will gradually increase its degree of opening." (Col. 6, line 67-Col. 7, line 6.) Subsequent to that, the vacuum in the chamber is reduced and the EGR valve is allowed to close slightly. (Col. 7, ll. 12-16.) The analysis used above with regard to amended claims 1 and 12 and Shiraishi et al. applies equally to the Aoyama reference.

Aoyama does not expressly or inherently describe commanding an engine shutdown, and subsequently determining when an engine speed is below a first predetermined level, and further controlling an oxygen displacement valve to allow at least some exhaust gas into the engine intake air flow "when it is determined that the engine speed is below the first predetermined level," as specifically recited in amended claim 1. Similarly, Aoyama does not expressly or inherently describe a system having a controller that is configured to command an engine shutdown and further control an oxygen displacement valve to allow at least some exhaust gas into the engine intake air flow "after an engine shutdown is commanded and the engine speed is below the first predetermined level." Thus, with regard to Aoyama and amended claims 1 and 12 of the present application, the MPEP definition of anticipation is not met. Amended claim 1 is the base claim for amended claim 3, and amended claim 12 is the base claim for amended claim 14. Each of these dependent claims contains all of the limitations of its respective base claim, as well as additional limitations which further distinguish it from the cited reference. Therefore, with regard to Aoyama and amended claims 3 and 14 of the present application, the MPEP definition of anticipation is not met.

The Examiner rejected claims 1, 5-6, 12, 16 and 18 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,681,564 (Nishiyama et al.). The Examiner states that Nishiyama et al. discloses the control of an oxygen displacement valve such that at least a portion of engine exhaust gas is directed into an engine air intake "when an engine speed is below a first predetermined level (Fig. 8, step 201 and 208)." Step 201 in Nishiyama et al. includes detecting engine speed and fuel injection rate; however, this information is used by a controller 32 to calculate an engine load. (Col. 10, ll. 6-9.) Prior to the adjustment of the EGR valve in step 208, three additional steps are illustrated in the flowchart shown in Figure 8 in Nishiyama et al. None of these steps expressly or inherently describes "commanding an engine shutdown [and] determining when an engine speed is below a first predetermined level after the engine shutdown is commanded," as recited in amended claim 1. Nor does Nishiyama et al. expressly or inherently describe a controller configured to perform those functions, as recited in amended claim 12. Therefore, with regard to Nishiyama et al. and amended claims 1 and 12 of the present application, the MPEP definition of anticipation is not met.

Amended claim 1 is the base claim for amended claims 5 and 6, and amended claim 12 is the base claim for amended claims 16 and 18. Each of these dependent claims contains each of the limitations of its respective base claim, as well as additional limitations which further distinguish it from the cited reference. Therefore, with regard to Nishiyama et al. and amended claims 5, 6, 16 and 18, the MPEP definition of anticipation is not met.

The Examiner rejected claims 1, 7, 11-12, 19 and 22 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,839,621 (Kaneko). The Examiner states that "Kaneko further discloses the ability of this system and method to close the intake and EGR valve when stopping the engine, and then only opens the intake valve when the engine is restarted. (Col. 4, lines 45-56)." Not only does this fail to expressly describe the elements recited in amended claims 1 and 12 of the present application, it describes functionality that is counter to the invention as recited in amended claims 1 and 12. For example, amended claim 1 recites a method that controls an oxygen displacement valve to allow exhaust gas to be directed into an engine air intake after commanding an engine to be shutdown. Similarly, amended claim 12 recites a system including a controller which is configured to perform such a command and to control an oxygen displacement valve to allow exhaust gas into the engine intake air flow after performing such a command. Thus, Kaneko does not even inherently describe the elements of amended claims 1 and 12 of the present application. Amended claim 1 is the base claim for amended claims 7 and 11, and amended claim 12 is the base claim for amended claims 19 and 22. Each of these dependent claims contains all of the limitations of its respective base claim, as well as additional limitations which further distinguish it from the cited reference. Therefore, with regard to claims 1, 7, 11-12, 19 and 22, and the reference Kaneko, the MPEP definition of anticipation is not met.

Claim Rejections—35 U.S.C. § 103

The Examiner rejected claims 8 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Kaneko in view of U.S. Patent No. 4,312,310 (Chivilo' et al.). The Examiner states that Kaneko discloses the invention claimed in claims 1, 7, 12 and 19, "but

does not disclose a device that spins the engine up to starting speed." As discussed above in regard to the anticipation rejections, Kaneko does not expressly or inherently describe all of the elements of amended claims 1 and 12. In addition, Kaneko does not teach or suggest all of the claim limitations of amended claims 1 and 12. As clearly stated in the MPEP, in order to establish *prima facie* obviousness, all of the claim limitations of an invention must be taught or suggested by the prior art. MPEP § 2143.03, 8th ed., Rev. 3. Even with the addition of the Chivilo' et al. reference, the combination does not teach or suggest all of the claim limitations of either of amended claims 1 or 12. Because amended claim 1 is the base claim for claim 8, and amended claim 12 is the base claim for amended claim 20, the combination of Kaneko in view of Chivilo' et al. also fails to teach or suggest all of the claim limitations of these dependent claims. Therefore, with regard to the combination of Kaneko and Chivilo' et al., and claim 8 and amended claim 20 of the present application, the MPEP requirements for establishing *prima facie* obviousness are not met.

The Examiner rejected claims 9 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Kaneko as applied to claims 8 and 20 above, and further in view of U.S. Patent No. 3,709,201 (Cook). As discussed above, Kaneko does not teach or suggest all of the claim limitations of claim 8 or amended claim 20, and the combination of Kaneko and Cook similarly fails to teach or suggest all of the claim limitations of amended claims 9 and 21. Therefore with regard to the Kaneko and Cook combination, and amended claims 9 and 21 of the present application, the MPEP requirements for establishing *prima facie* obviousness are not met.

The Examiner rejected claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Kaneko as applied to claim 9 above, and further in view of U.S. Patent No. 3,935,850 (King). The Examiner states that "[t]he modified Kaneko discloses the device as described above...." As discussed above, this is not the case, and modified Kaneko does not disclose the device described in amended claim 9, which has as its base claim amended claim 1. Thus, the combination of Kaneko and King fails to teach or suggest all of the claim limitations of claim

10 of the present application, and the MPEP requirements for establishing *prima facie* obviousness are not met.

The Examiner rejected claim 17 under 35 U.S.C. § 103(a) as being unpatentable over Nishiyama et al. as applied to claim 16 above, and further in view of King. As discussed above in regard to the anticipation rejections, amended claim 16 has as its base claim amended claim 12, and each of these claims has limitations which are neither taught nor suggested by the combination of Nishiyama et al. and King. Therefore, with regard to claim 17, and the combination of Nishiyama et al. and King, the MPEP requirements for establishing *prima facie* obviousness are not met.

The Examiner rejected claims 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Shiraishi et al. in view of U.S. Patent Application Publication No. 2005/0131618 (Megli et al.). By this paper, claim 23 is amended to more particularly point out and distinctly claim the subject matter of the invention. Amended claim 23 recites a method for controlling exhaust emissions, which includes the steps of "commanding an engine shutdown; determining when an engine speed is below a first predetermined level after the engine shutdown is commanded; and controlling the variable valves such that at least a portion of exhaust gas generated by the ICE is directed into an intake air flow of the ICE when it is determined that the engine speed is below the first predetermined level." No such limitations are taught or suggested by the combination of Shiraishi et al. and Megli et al. The same is true for amended claim 24, which depends directly from amended claim 23. Therefore, with regard to amended claims 23 and 24, and the combination of Shiraishi et al. and Megli et al., the MPEP requirements for establishing *prima facie* obviousness are not met.

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Based on the foregoing, allowance of each of the pending claims is requested.

Respectfully submitted,
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